

F-29

RETAI LIATOR



ATARI ST
AMIGA

A Mug UK(tm) scan for Atari Legend, September 2007.
<http://www.atarilegend.com>

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F29-RETALIATOR SCENARIO

A new and deadly breed of fighters is taking shape in the secret workshops deep in the American West: The Advanced Tactical Fighter F22 and the Forward Swept Wing F29. They will convey one message to the enemy – the Retaliators are effective, deadly and meet the threats of 21st Century warfare.

Their pilots will have a dangerous mission; to penetrate bands of surface to air missiles, destroy hostile AWACS and radar, launch ground strikes at enemy resources, armies, installations and communication links, and to break up hostile raids before they reach friendly territory. Their bases will be under air and missile attack from H-hour + zero. They must destroy four or more hostiles for every loss in order to survive and win.

LOADING

ATARI ST

Switch your computer off. Insert the first disk and switch the computer back on. The program will load automatically. Follow on-screen instructions.

Amiga 500

Insert the disk into the primary drive and switch your computer on. The program will load automatically.

Amiga 1000

Insert the Kickstart disk into the primary drive and switch your computer on. When the Workbench prompt appears, insert the program disk and the game will load automatically.

AIRCRAFT DATA

Retaliator is a flight simulation program based upon two of the most revolutionary aircraft designs ever conceived: The Lockheed F22 Advanced Tactical Fighter and Grumman F29. The Grumman F29 has been developed as a technology demonstrator towards creating the ultimate fighter aircraft and was a genuine contender for the USAF's new advanced tactical fighter but is now unlikely to enter service as it was judged too risky and too costly in terms of performance for the ATF. However new studies have shown a forward swept wing STOVL (Short Take Off and Vertical landing) multi-role supersonic fighter which could be feasible in the late 1990's thanks to improved engine performance. The F29

shows great potential for the next generation advanced tactical fighter, around 2007 to 2012.

Background to the new ATF

In 1979, the USAF first thought of a new advanced tactical fighter to replace the F15, whilst the Navy replaced the F14. In 1981 the first step towards a new fighter was taken when the ASD asked the American aircraft developers "request for information", and their views on a new aircraft to be called The Advanced Tactical Fighter. From studies on the ATF it was clear that the most important attributes for it were: STOL – Short Take Off and Landing

STEALTH – Radar Invisible

SUPERCruise – Supersonic persistence without using any afterburner

In 1986 Lockheed, General Dynamics and Boeing announced an agreement that they would team up to develop an ATF if one of their proposals was selected. Two weeks later Northrop and McDonald Douglas announced a similar arrangement. Two main designs had been picked for the fly-off competition: The Lockheed F22 and the Northrop F23. The FSX-29 by Grumman was shut out at this stage. The first flight for the F22 (which is now the favourite contender for the ATF) was set for the Autumn of 1989 in California. Full production will commence in 1994 at a cost (in 1989 terms) of 60 million dollars per unit.

Technical Information on the F22 and F29 ATF

The ATF flies at Mach 1.4 to 1.5 (930 to 1000 mph) on dry thrust with full armament and cruise at a greater altitude than current fighters; 70,000 ft as opposed to 50,000 ft in the High Fast Sanctuary with less threat against SAMs, and at supersonic speed covering the ground 75% faster than a subsonic cruise type, reducing the fighters exposure time by a factor of 3 in the shrunken danger zone.

The ATF combat radius is 700 to 920 miles – a significant increase over the F15. It would be able to take-off from a 2,000 ft runway or rough surfaces and easier to maintain than the F15. Being slightly heavier than a F15 (around 60,000 lbs), the ATF has the same wingspan but is slightly longer to accommodate the extra fuel load. Great use is made of wing to body blending like the F16, SR71 and B1, again providing more internal volume for fuel and weapons.

For its stealth capabilities the ATF is made with RAM (Radar Absorbent Materials). It is also designed to reduce the radar cross section by a factor of 100 compared to the F15.

The engines are Pratt and Whitney XF119 with vectoring and reversing nozzles, having the advantage in all flight regimes as well as increasing the manoeuvrability. Reversing nozzles remove the use of large air brakes.

The control surfaces (flaps, canards and rudders) and the vectoring nozzles on the ATF work together under the control of powerful computers to give the impression of flying a straight-forward simple plane. The actual aircraft will be so complex and have so many flight modes the pilot would not be able exploit them all. The pilot issues a command and the system will interpret it, i.e if the pilot pulls back sharply on the stick, the control system will first deflect the vectoring nozzles upward and the MAW flaps (Mission Adapted Wing) downward, to rotate the fuselage and start the aircraft into the manoeuvre.

The basic argument for supermanoeuvrability (the ability to turn at low air speed at high G's within a very small radius) is that an aircraft which cannot emulate such a manoeuvre can be prevented to bring its weapons to bear.

MAIN SELECTION COMPUTER

(Start up sequence)

1. The Enrol Data Bank

Here you enrol to the USAF and select your rank. The ranks available from lowest to highest rank are as follows:

First Lieutenant – Captain – Major – Lieutenant Colonel – Colonel.

The higher the rank you select, the more variety of missions will be available. More points are awarded to the higher rank for the same mission as the game will be harder (see scoring). To return to the main menu, press either return or click on OK or Cancel with the mouse.

2. Choose your scenario

On this screen you are given the choice of four different locations. Three of these locations will involve you in the wars that are taking place in those areas. The four scenarios are:

a) Arizona

You are assigned to the USAF Test Range Arizona where you will be given the controls of the new ATF and the new F29. The test range is approximately 1000 sq miles and contain various targets and remote control mobile vehicles. This world is a true simulation of a hostile environment.

b) The Middle East

Several F22's and F29's have been exported to a friendly Middle East nation who are currently engaged in a fierce war with two other countries. The friendly nations artillery is, however heavily outnumbered although it is technically superior to its rivals. Consequently in order to succeed three enemy planes must be destroyed for every one friendly aircraft destroyed.

The War is on two fronts, with large tank battles to the South West and artillery exchanges across the natural river boundary to the South East. The ATF Squadron is based near the capital Tel-A-Von.

c) The Pacific Ocean

The strategically important volcanic islands of Solomos provide vital oil supplies to the USA, and is the only deep sea port for 1000 miles in all directions. A small military airstrip is located there with a squadron of ATF's.

A military blockade by the enemy fleet has cut-off all support to the islands, threatening the vital oil supplies to the USA and is ready to invade the islands.

A task force from Guam led by USS JF Kennedy is steaming towards the war zone with two squadrons of F22's, F18's and F29's.

d) Europe 196 the Ultimate Battle Front

The diplomacy has failed and the world is about to plunge into another world war: A full scale conventional war across the heartland of Europe will begin. All airfields, installations, factories and towns will be attacked and initial losses are expected to heavy on both sides.

The NATO forces have been mobilised and put on full alert, as have all air bases with all squadrons being dispersed away from the vulnerable bases. Mounting enemy activity has been reported near the border where an estimated 9000 tanks and 3 million soldiers have amassed.

The enemy is expected launch a massive assault on key points along the border and its airforce will plunge deep into your country crippling the infra-structure.

Two enemy tank divisions have assembled along the border with huge reinforcements being drawn up from their rear flanks. The situation will be critical if the enemy mobile tank divisions break through the border defences as they will plunge deep into your territory threatening the industrial complexes at Huttgart, Nurgan and Coberg.

To select your scenario press key 1, 2, 3 or 4.

3. View Sierra Hotel Pilots

This screen shows the top ten highest scores achieved by pilots. These scores are saved automatically. Press RETURN or CLICK the OK button with the MOUSE to return to the main menu.

4. View Pilots Log

The game disk is designed to store all of the statistics of one pilot e.g his/her number of missions completed; name; rank; score and awards.

To clear this log press ESCAPE and all data will be erased for a new pilots log. It is also cleared if the pilot is killed or retires.

5. Load Pilots Log

This loads up the previously saved log of the game.

6. Zulu Alert

Zulu Alert provides a quick entry into the game.

You are given unlimited weapons and begin a "shoot-'em-up" game in your selected scenario, starting in mid-air flight against a squadron of enemy fighters. No points are awarded and no log information is saved to disk as this is merely a practice exercise.

7. Mission Control

Selecting this option puts you into the mission control section of the game.

When entering Mission Control you are provided with the latest update of the war situation in your chosen scenario (except American world) with a detailed map showing the battle front and text describing the latest events in the war. War updates are provided after every four or so missions, dependent on your scenario.

Press RETURN to access the Mission Control options screen.

MISSION CONTROL SELECTION MENU

1. Select Plane

Using the mouse, point the cursor on the panel below the plane you wish to select; clicking once on the appropriate panel will select the plane and return you to the Mission Control menu.

2. Select Base

Using the mouse, point the cursor on an airfield located on the map. Clicking with the left button on an air base provides you with a text description of the base and clicking again on the same base will confirm this as your home base in the game; i.e starting location.

3. Select Armament

See Weapons and Stores

4. Choose Mission

Here you are provided with a selection of missions, the number of which is dependent on three factors: your rank; your location and how long into the war you are. Simply select a number.

5. Accept Mission

This puts the player directly into their chosen scenario. It is essential that all aircraft, weapons, mission scenarios etc have been selected prior to accepting a mission as the default status will be totally inadequate for the scenarios you will be presented with.

On entering the 3-D section of the game you are shown a welcome screen appropriate to your location. Here you have the option to abort by pressing escape and return to mission control. Any other key will start the mission.

END GAME

At the end of the game whether you fail or complete your mission, or are killed or retire you are returned to the main computer bank where you are given a quick debriefing of the mission and your current statistics. Pressing any key to continue will then return you to the mission control selection screen.

WEAPONS AND STORES

The F-22 and F-29 boast a wide and awesome variety of weapons. For air to air and air to ground missions the weapons are selected by clicking on the left mouse button over the appropriate weapon (to deselect, click RH button). Both planes have a limited payload and are restricted to 11000 pounds on the ATF and 9000 on the FSW.

Weapons are subject to availability, dependent on your base, location and rank. Shortages will become likely further into the wars. Both planes have seven pylons

(the ATF has four external and three internal pylons in a bomb bay to reduce drag).

MAXIMUM STORES PER PYLON (diagram)

WEAPON

AIR TO AIR

PYLONS:

BACKWINDER--9X

AIM 9M-R SIDEWINDER

AIM132 ASRAAM-N

AMRAAM-120A

AIAAM-FIREBOLT

AIR TO GROUND


MRASM-AGM 109H

ASLAM BDM

CSW

MAVERICK AGM-1

EXTERNAL FUEL TANK



	A	B	C	D	E	F	G
BACKWINDER--9X	1						1
AIM 9M-R SIDEWINDER	1	1	1		1	1	1
AIM132 ASRAAM-N	1	3	3	3	3	3	1
AMRAAM-120A		1	2		2	1	
AIAAM-FIREBOLT		1	1	1	1	1	
MRASM-AGM 109H				1			
ASLAM BDM				1			
CSW			1	1	1		
MAVERICK AGM-1		3	3		3	3	
EXTERNAL FUEL TANK			1	1	1		

TWIN GUN, 1760 ROUNDS

AIR TO AIR WEAPONS

AIAAM 196 Fire Bolt

Advanced interceptor, long range "fire and forget" air to air missiles. These are the successors to the AIM 54 Phoenix and are probably the most advanced and sophisticated missiles in the world with a true radar homing.

Weight – 980 lbs

Range – 250 km (130 miles)

Speed – Mach 5

AMRAAM 120A

Advanced medium range air to air missile "fire and forget" with active radar homing known also as BVR (Beyond Visual Range) missile.

Weight – 326 lbs Range – 50 km

Speed – Mach 4

AIM9M-R-SIDEWINDER

Short Range AAM is the latest and most advanced of the sidewinder family with an imaging infra-red seeker. This builds a detailed image of the target (similar to a Maverick) and isn't easily duped by counter measures.

Weight – 190 lbs

Range – 11 miles

Speed – Mach 3

AIM132 ASRAAM-N

Advanced short range AAM. This is smaller and more agile than the Sidewinder and has an advanced focal plane array homing radar (infra-red).

Weight – 156 lbs

Range – 9 miles

Speed – Mach 3

BACK-WINDER 9X

Rear mount short range air to air missile. A new weapon that overcomes the problem of a rear firing missile system. It locks upon the attack radar of the enemy fighter.

Weight – 180 lbs

Range – 6 miles

Speed – Mach 3

AIR TO SURFACE MISSILES

MRASM, AGM-109H CRUISE MISSILE (also known as SOM'S – Stand Off Missiles)

A base line airfield attack missile with DSMAC II (digital scene matching area correlation) guidance and carrying a heavy payload of 58 TAAM (Tactical Airfield Attack Missile). Bomblets are discharged from upward facing tubes along the fuselage. This is a launch and leave missile that flies for a few hundred miles hugging the landscape and finally flies with great precision down the centre line of the runway whilst ejecting the bomblets causing a row of craters.

Weight – 2825 lbs
Range – 370 miles
Speed – 650 mph

ASALM (Advanced Strategic Air Launched Missile)

Effective against all form of surface target including those of the highest degree of hardening. Also able to destroy AWACS type aircraft.

Weight – 3100 pounds Range – 700 miles +
Speed – Mach 3.5 to 4.5

MAVERICK AGM 1 LASER AND TV

The latest generation of the Maverick family, the smallest of the fully guided self-homing ASM's in use. An improved version of the AGM 65E, with infra-red.

Weight – 484 lbs
Range – 25 miles
Speed – Mach 1.6

CSW (Conventional Stand-Off Weapon)

Seen by the USAF as the best way to destroy hostile anti- aircraft defences and armour moving behind the FLOT (Forward Line of Troops). It can distinguish between tanks and low value trucks or decoys and it is smaller and much cheaper than the MRASM. It is fitted with a PLSS (Precision Location Strike System) and has 20 warheads which separate over an area homing in on particular targets. These are especially effective against formations of tanks and armour.

Weight – 2700 lbs
Range – 30 miles
Speed – Mach 1.1

NOTE: Standard NATO Ground Forces have FOF devices (Friend or Foe), so aerial launched "smart weapons" avoid them, such as the CSW and other cruise missiles.

MISSIONS

The enemy vehicles in Retaliator have a dark-grey camouflage, whilst your own forces are green/brown. Enemy Battleships are also dark-grey. To differentiate between enemy and friendly aircraft, only enemies show on your radar. Similarly, the FOF (Friend or Foe) system prevents you from launching a missile upon a friendly airborne target.

Note: there are 3 tanks in 1 battalion, and 3 planes per squadron.

All missions will only be deemed complete when your aircraft has completed the mission and landed safely at an appropriate base.

ARIZONA TEST RANGE MISSIONS

Mission 1: Hit the two canvas targets in Sector 7B.

Mission 2: A convoy of retired trucks are moving along the east-west highway. Destroy all trucks in Sector 8A-8H.

Mission 3: Hit the freight trains on the rail-line in Sector A3.

Mission 4: Destroy the SAM sights and their radar control station in Sector 5D.

Mission 5: Hit the Test Bridge in the Yuscon firing range and avoid the electronic SAM simulators located in the area F8.

Mission 6: Engage the Drone MIG29B Fulcrum Fighters in your vicinity. Two must be destroyed.

Mission 7: Attack the mock-tank formations crossing the Nevada Plains in Sector 3A.

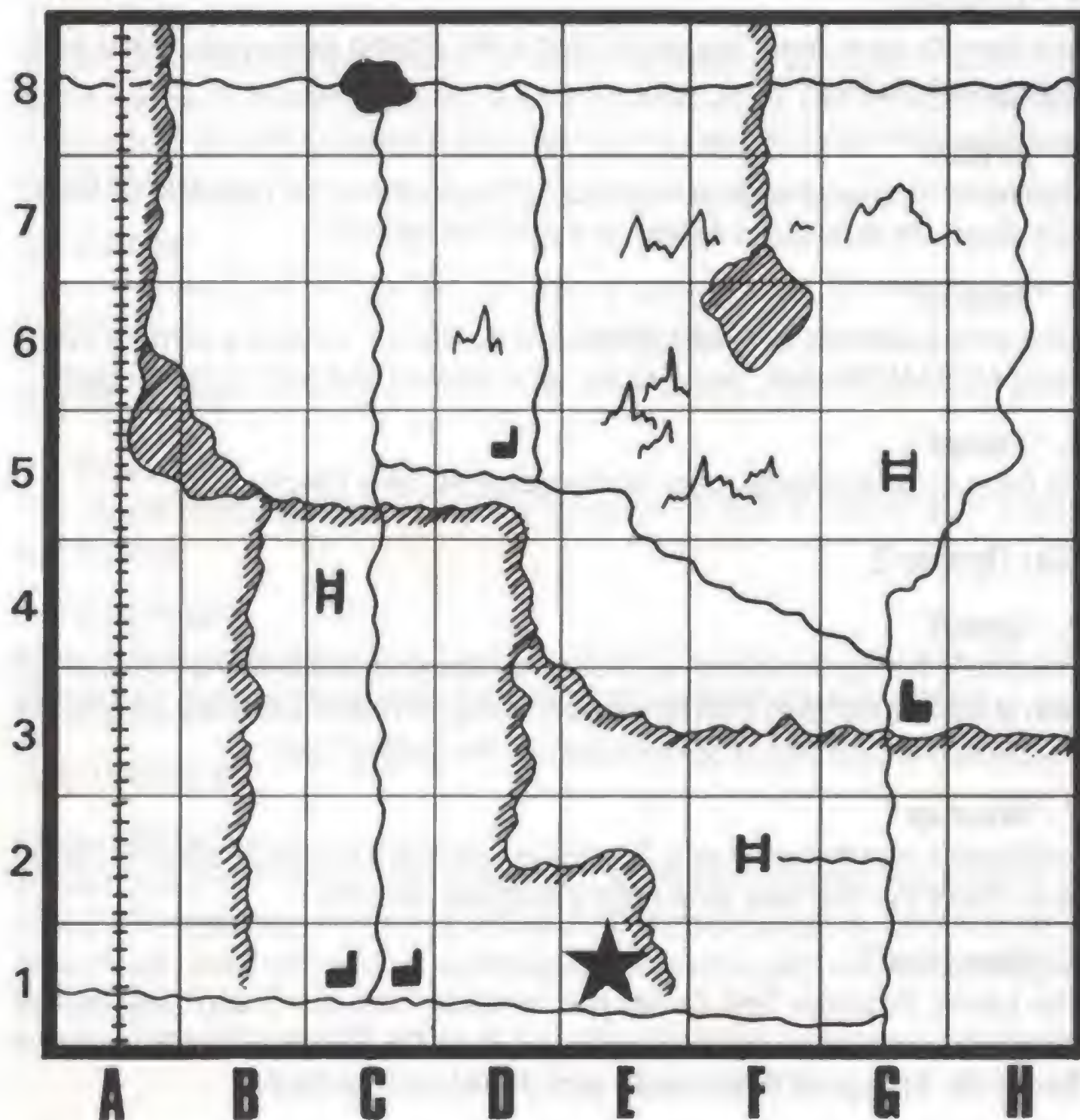
Mission 8: Destroy the industrial complex in Sector 1C.

Mission 9: Destroy the airbase in Sector 4C and the main runway; drone fighters are located at this base.

Mission 10: Destroy the enemy command centre, avoiding the complex SAM network located in Sector 1E. This is perhaps the most difficult mission on the North American test range.

NOTE: If you destroy any unauthorised targets or civilian property, you will be liable to court martial!

AMERICA



- ★ Enemy HQ
- └ Factory/Industrial Complex
- ⌌ Airbase
- ~~~~ Rivers
- Roads
- +++ Railroads
- Town

PACIFIC MISSIONS

War Update 1

1. *"Scramble"*

Two bandits have been located in Sector 4D closing in on your island base. Engage and destroy.

2. *"Firebolt"*

The enemy has launched an aerial attack on the oil refinery on Vejan Island (Sector 8D). Repel the enemy and destroy at least three fighters.

3. *"Drop-in"*

An enemy battleship has been detected in Sector 4G. Launch a surprise attack using MSRAM Missiles, avoiding its radar network and destroy the battleship.

4. *"Plunge"*

Hit the enemy oil storage depot on the island of Zahiti (Sector 1D).

War Update 2

1. *"Splash"*

The enemy fleet has launched a full scale amphibious attack on Troy (Sector 8E) with at least ten landing craft landing on the North Shore. These are escorted by a squadron of fulcrums. You must destroy the landing craft.

2. *"Warmup"*

Intelligence reports two Enemy Frigates are closing from the South in Sector 3B to reinforce the Red fleet. Give them a surprise welcome.

3. *"Deep Heat"*

The Leonid Brezhnev fleet carrier has retreated from the Enemy fleet but has launched a long range strike force closing in on the Solomos Islands located in Sector 4B. Engage all three hostile aircraft and destroy them.

4. *"Beta-1"*

The gigantic Enemy Super Tanker Azov has to be crippled in a surprise retaliator strike in Sector 4G. MIGs provide aerial cover.

War Update 3

1. *"Revenge"*

The battleship New Jersey has stormed into the scene as two Enemy cruisers, the Kresta 2 and Admiral Zozulya, have engaged her. Provide aerial cover against incoming MIGs and engage the cruisers in Section 7H.

2. "Arc"

The enemy has finally launched a full scale attack on Solomos with ten plus ships to the south, barraging the southern coast. Scramble and destroy the four MIGs providing aerial cover for the fleet and hit any enemy ships.

3. "Strike Back"

The US fleet has arrived in Sector 5H, steaming towards your island bastion led by the carrier JF Kennedy. Launch a counter strike at the Enemy fleet, avoiding SAMs whilst the MIGs engage the US Task Force. Destroy at least two ships and return to base.

4. "Stamps"

You must attack and destroy the vital enemy gas plant and refinery on Zahiti in Sector 1D.

War Update 4

1. "Knock-Out"

The Leonid Brehznev has been sighted in Sector 1G, with a support ship. Locate and destroy.

2. "Fight Back"

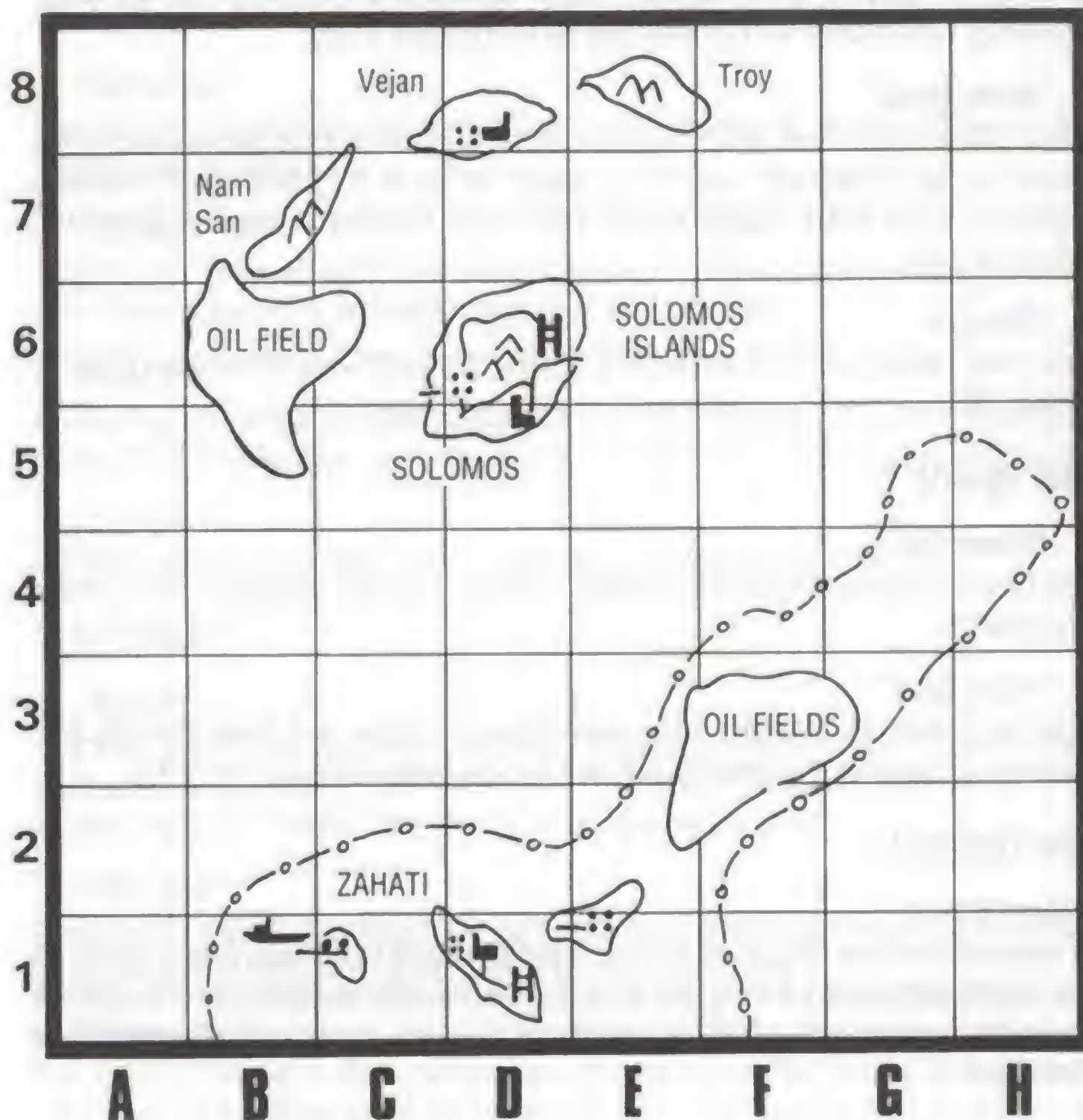
A fierce Enemy counter-strike has sunk three US ships and threatens the JFK. Provide air support and destroy the two Enemy battleships in Sector F4.

War Update 5

"Hand Shake"

A meeting between the two fleets has been arranged to discuss peace terms on the Enemy battleship Leningrad, in Sector 4B. Provide an aerial patrol to enforce an exclusion zone with a MIG, as intelligence reports a sabotage attempt will be imminent.....

PACIFIC



- OIL/GAS RESOURCES
- ⌒ INDUSTRIAL AREAS
- ⌒ AIRFIELDS
- ⌒ OIL TANKERS
- ✓ ROADS
- ⌒ HILLS/MOUNTAINS

MIDDLE EAST MISSIONS

War Update 1

1. "Bravo"

Destroy the tank brigade (3 tanks) crossing the border in Section 5A.

2. "Bogie"

Two MIGs are closing in on your base sighted in Sector 6F. Engage and destroy.

3. "Alpha"

Destroy the radar tracking station in Sector 4D to provide an aerial corridor.

4. "Foxstrike"

Destroy the roadbridge in Sector 3F to hamper the enemy reinforcements.

5. "Lizard"

An enemy armoured column of at least six trucks and four tanks is advancing up the highway in Sector 4C. Stem the advance and obliterate the column.

6. "Charlie"

Launch a deep strike attack on the enemy airfield in Sector 2H.

War Update 2

1. "Moonstruck"

Hit the industrial works in Sector 3B which provides ammunition to the Arab forces.

2. "Rogue"

The power station in Sector 2F, east of the city needs to be knocked out.

3. "Pincer"

Refer to your War Update Map before commencing this mission, as it will inform you of the whereabouts of two grey enemy tank battalions which are leading an assault. Destroy these six enemy tanks and return to base.

4. "Torch"

Destroy the tracking station in Sector 4A.

5. "Crossfire"

Destroy the enemy oil refinery in Sector 1F with your primary target, the three oil holding tanks.

War Update 3

1. *"MayDay"*

Three enemy fighters are closing in on the capital. Break up the raid, destroy all fighters and return to base. Move to Sector 5E to engage.

2. *"Lord"*

Two continuing tank battles are occurring along the front-line. Stem the enemy divisions. Refer to War Update Map on computer for the battle locations.

3. *"Torture"*

You must locate and demolish the rail-bridge in the lower Sector of 3B.

4. *"Romeo"*

Lac Mi-El tank farm in Sector F1 is assembling Russian T-80s imported in from Russia. Raze the complex to the ground.

War Update 4

1. *"Heat"*

Information is sketchy at this time, but it is believed a large enemy road convoy is located around the vicinity of Sector 1D. This comprises of over 10 trucks and tanks. You must locate this convoy and destroy.

2. *"Juno"*

A large scale aerial force is massing over enemy territory and moving towards the capital. Their target is uncertain but you must destroy four bandits and hold them away from your base. Vector south to Sector 3G.

3. *"Warrior"*

Destroy the chemical processing plant in Sector 1C, believed to be developing chemical weapons.

4. *"Gold"*

The greatest tank battle of the war is raging (refer to War Update Map), with all reserves being drawn up. Provide aerial support and destroy eight plus tanks.

War Update 5

1. *"Ajax"*

Miscon has lifted the restriction on bombing the enemy capital in Sector 1B and surrounding installations, and has made the international airport in Sector 2A its primary target. Destroy the main runway and return to base.

2. *"Dawn"*

Destroy the steelworks in Sector 1D, south west of the city, but make sure to avoid any damage to the Red Cross hospital based in the compound.

3. "Zeus"

The enemy has thrown everything into a new strike. Fresh Enemy armour has been deployed to the front line (see War Update Map) and is overwhelming the exhausted armoured divisions. Provide aerial support and smash the lead tank battalion.

4. "Red"

The road and rail networks have been badly damaged consequently jeopardising supply routes. Shortages to the front line are threatening our positions, so you must provide aerial cover for a massive convoy moving from Tel-A-Von to the front line against impending MIG attack. This takes place in Patrol Sector 7G.

War Update 6

1. "Standstill"

The situation is critical with all three countries industries smashed. The massive El Alamein factory (Sector 1A) is the sole productive enemy plant. Avoid the fierce SAM systems and destroy the complex.

2. "Vice"

The forces on both sides are reaching exhaustion as the war is becoming a war of attrition. Fanatical enemy tank brigades in the relevant sector (see War Update Map) are causing havoc with our resisting ground forces. Destroy the four leading tanks and the supply vehicles.

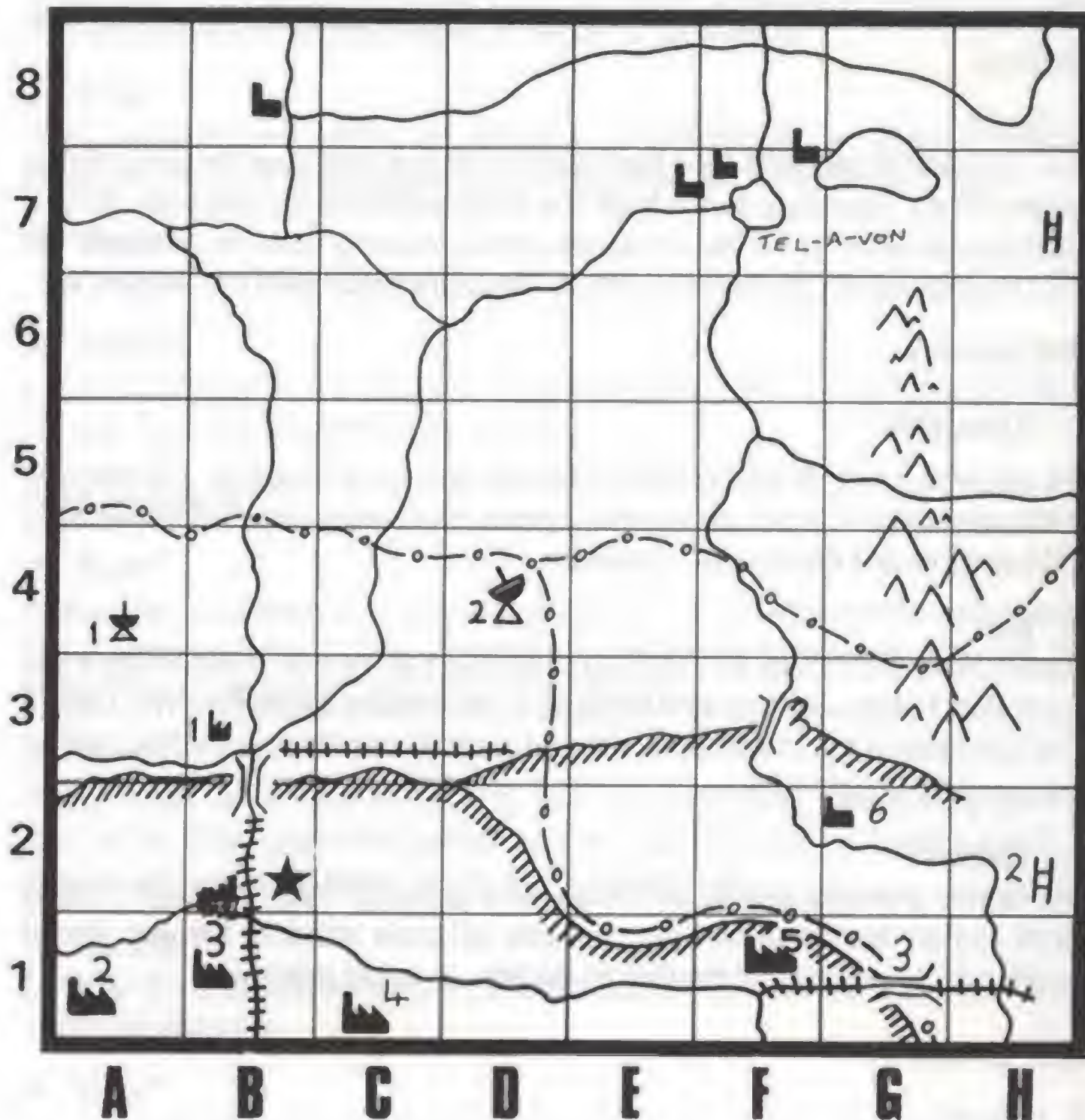
3. "Thunder"

The heavily pounded enemy air-forces have gathered from unknown runway strips and are launching perhaps their last full-scale attack of the war. Vector south to 4G to engage and destroy all Bogies – number unknown.

War Update 7

1. "Abyss"

On this day the war reaches its climax with the outcome unknown. A secret or special range of missions will exist in this final chapter of the war.....



MIDDLE EAST

Installation



Factory/Power Station



Bridge

Radar Station



Airfield



Road



Rail



River



Enemy HQ



Town

EUROPE MISSIONS

War Update 1

1. *"MIG Cap"*

Zulu Alert: two incoming MIGs closing in your base. Search, engage and destroy. This is not a drill – repeat – this is not a drill.

2. *"Bomb Cap"*

Three enemy bombers are closing in on your base at low level, escort provided. Vector 30 degrees for Bogey – engage and destroy.

3. *"Intercept"*

Two SU27 Flankers are crossing the border and are zig-zagging towards Huttgart (Sector 8A). Engage and destroy.

4. *"Tom Cat"*

Three plus bandits are providing aerial support for advancing enemy mobile divisions along the border in Sector 4D. Engage and destroy.

5. *"Aggressor"*

Provide close aerial support against advancing Red army tanks for the army group centre in Sector 6D, near Ziepen. Destroy the two tank brigades (6 tanks).

6. *"Firehand"*

Two enemy mobile divisions are engaging the British Seventh Centurion Tank Division in the north of the country. Stem the advance and destroy the leading brigade in Sector 8D.

7. *"Ironhand"*

Provide an aerial corridor along the southern border section by destroying the three enemy SAM sites and radar site near the Stein river in Sector 3D.

8. *"Backbreaker"*

In order to stem enemy rear movements and hamper rear supply lines, your primary target is the key bridge Liepen in Sector 5E.

9. *"Limelight"*

The road convoys towards the front from Frunsroure, across the Liepen bridge, must be destroyed (Sector 8F).

10. *"Linebacker III"*

This is a deep strike retaliatory mission against the Red Army airfield of Tranevora, in particular against its main runway and hanger areas in Sector 1G.

War Update 2

1. *"Jawbreaker"*

Destroy the bridge in the northern section on the Stein river (Sector 6D).

2. *"Four Star"*

Destroy the enemy supply dumps in Sector 2F.

3. *"Big Ear"*

Destroy the radar tracking station and the SAM emplacement near-by Sector 7E.

4. *"Deep Throat"*

The enemy air force has been scattered to regional bases across their country. Miscon has detected a large enemy presence near an airstrip in Sector 3H. Destroy any airborne hostiles and the runway.

5. *"Strike Out"*

The enemy has launched its biggest bombardment of the war against all air force bases. Five plus bandits are closing over the border – heading unknown. Intercept and destroy. Vector to Sector 2C.

6. *"Tin Can Alley"*

Provide close air support for allied tank forces against a massive enemy assault. Destroy the two leading enemy battalions (6 tanks). Refer to War Update Map for battle location.

War Update 3

1. *"Iron"*

Destroy the vital road bridge in Sector 8C, to prevent enemy supplies reaching the front.

2. *"Titan"*

Large enemy convoys are rallying towards the front. A massive amount of armour is moving west in Sector 8G, with pontoons providing river crossings. Destroy the convoy and return home.

3. *"Snake Eye"*

Fierce tank battles are continuing in various sectors (see War Update Map), with French and British Northern Tank Divisions holding their ground. Provide air support against three MIGs and destroy the leading enemy tank brigades in both battles.

4. *"Grind"*

The enemies massive industrial complex in Sector 5H provides machine parts for the Red Army war machine. Destroying this complex will cause great shortages to the enemy.

5. "Lights Out"

Cripple the riverside power station in Section 5H, destroying the cooling towers which will disrupt enemy productivity.

6. "Fly-by"

A large number of allied interceptors have been downed by a Enemy MIG 29 Hunting Squadron. The three ace fighters are operating from the Alps in Sector 1D. This mission is self-explanatory!

War Update 4

1. "Operation Wolf"

A new squadron of MIG 29-C Fulcrums have been located zig-zagging across the border towards Nurberg. Intercept in Sector 5C and break the pack up.

2. "Avenger"

A ferocious string of land battles has left the front line NATO forces exhausted, with two fresh Warsaw Pact tank divisions engaging them (refer to War Update Map for location). Halt the enemy attack and destroy at least ten tanks.

3. "Operation Thunderbolt"

Decimate the chemical factory in Sector 7H and its two storage tanks.

4. "Operation Bear"

Attack the arms factory in Sector 2H, avoiding the SAMs located nearby.

5. "Express"

Constant convoys of rail freight are arriving hourly on the rail-lines from the east to the enemy capital and the battle front. Destroy the rail-line and any trains in Sector 4H.

6. "Untouchables"

A squadron of enemy flanker bombers have destroyed several allied storage depots near the front line and are closing in on the international airport in Sector 7A. Engage and destroy.

War Update 5

1. "Venus"

The Red armies' second air force has reinforced the depleted first army and has launched the biggest aerial assault yet seen in the war, with six squadrons of fighters causing havoc to NATO ground forces. Provide aerial cover for Huttgart around Sector 7B against three closing MIGs.

2. "Venus 2"

Provide aerial cover from Nurbergs industrial complexes against the ominous threat of the squadron of three MIGs in Sector 4B.

3. "Counter"

The massed NATO ground forces are now being pinned down by this new surge of Enemy aerial dominance. Provide aerial cover for the Second US Tank Corp in the relevant sector (refer to War Update Map) and destroy any opposing tanks.

4. "Backache"

Launch a deep strike attack on the last main enemy bridge in Sector 7H to cloak the enemy rear guard action.

5. "Trax"

The massive tank factory in Sector 8H is primary target. Rip out the main building.

6. "Flame"

The huge storage depot in Sector 8H, conveniently located between a hospital and a church, has fuel for the Warsaw Pact armies. Destroy a storage tank and return home.

War Update 6

1. "Burst"

The hardest mission so far: hit the centre line of the international runway in Sector 6H and engage any scrambled bandits. Avoid the dense SAM belts to the west of the base.

2. "Mercury"

A rag-tag formation of fighters is closing over the border, towards your home runway and intelligence believes cruise missiles may be carried on board. Intercept and destroy the fighters and bring down any air-launched cruise missiles.

3. "Man Hunt"

The remnants of two massive armies are clashing in the relevant sector (see War Update Map). Destroy enemy hardware in this battle zone.

4. "On-Line"

The nuclear power station south-east of the enemy capital is your target. Destroy the cooling towers and main building, avoiding the reactor plant. This will plunge the enemy into a total black-out in Sector 7H.

5. "Saturn"

A train carrying new tanks to the front has been located by satellite in Sector 7H. Prevent the tanks from ever reaching the battlefield.

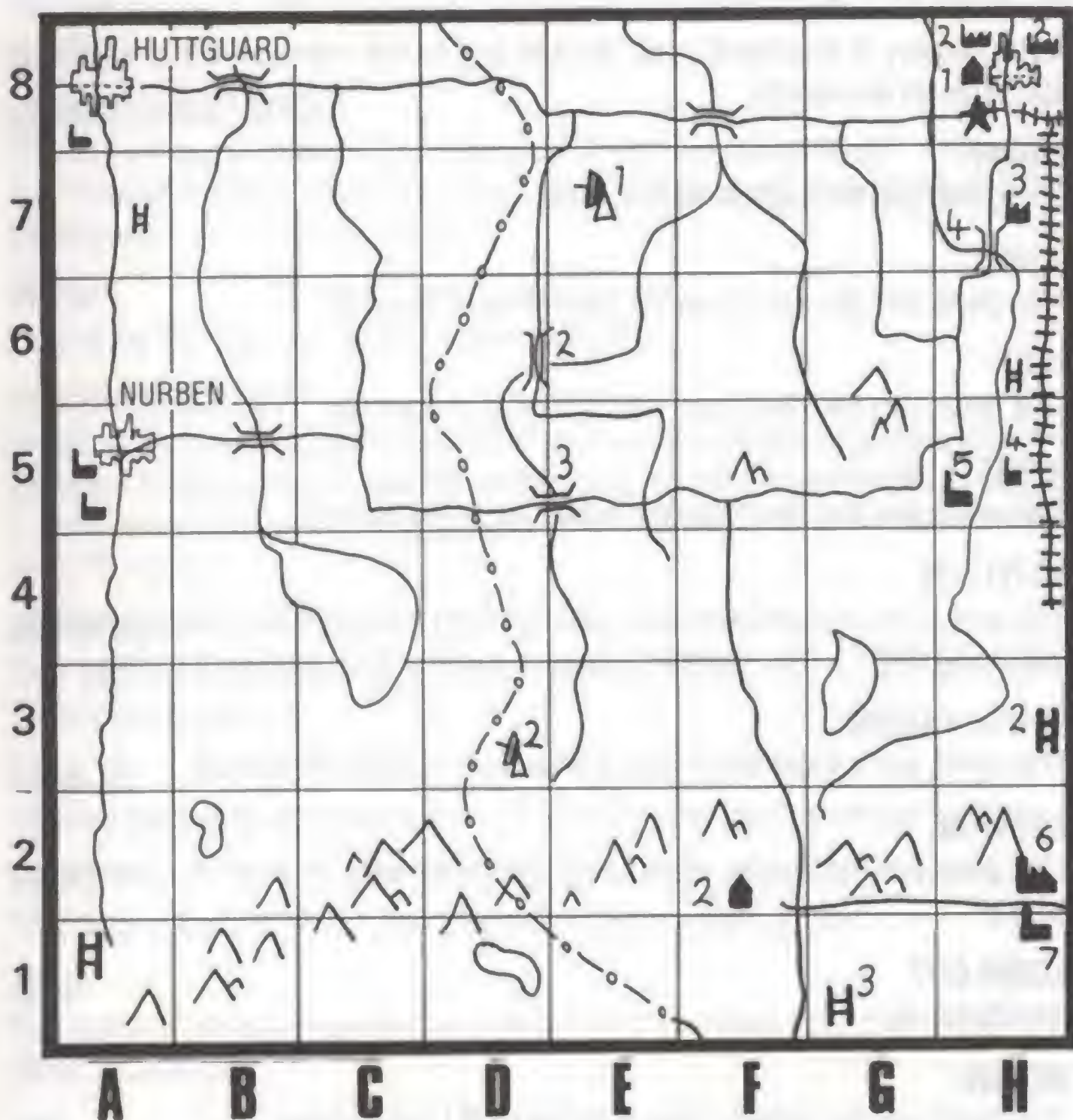
6. "Mars"

A heavily defended aircraft factory in Sector 8H has remained unscathed so far, and is producing large numbers of enemy aircraft. Destroy the main building.

War Update 7 (the final Update)

Your three missions are: No. 1 Saviour; No. 2 Retaliator and No. 3 Hour Glass.

These missions are all secret to protect the outcome of the war – refer to War Update Map.



EUROPE



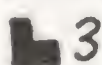
Road/Rail links



Rivers



Bridges



Industrial Area and Target number



Airbases



Border



Town



Known Radar site



Headquarters



Warehouses/Storage areas

PAGE

24

NO.

KEYBOARD CONTROLS

EJECT

Pressing this key once will place the systems into eject mode. This allows you 3 seconds to confirm by pressing the key a second time, which will then eject you from the plane. If the key is not pressed within the 3 seconds, all systems will revert to normal mode.

Note: this key is also used as an 'escape' key on the menu selection screens to abort/cancel any inputs.

FRONT

This gives you the cockpit view/display.

REAR

This gives you the view from the inside rear of the craft.

LEFT

This gives you the view from the left side of the aircraft.

RIGHT

This gives you the view from the right side of the aircraft.

SATELLITE

This gives you an overhead view, taken as from a satellite positioned at approximately 80,000 FT. Your aircraft is always at the centre point in this view.

SOUTH-FACING

This gives you a fixed south-facing view from outside the aircraft.

ZOOM-IN

This gives you the facility, when using an exterior view, to zoom-in towards your aircraft.

ZOOM-OUT

See Zoom-in.

BEHIND

This gives you an exterior view of the aircraft from the rear.

NORTH-FACING

See South-facing.

MFD 1/2/3

These keys act as toggles between the three different modes on each of the three MFD displays. See Instrument Description section.

SUPERCUISE

Pressing this key gives an instant thrust of 100%. This is usually used on high-level flights only.

RPM -/+

These keys increase and decrease revs/thrust.

ECM ON/OFF

This key toggles the electronic counter-measures system. See Instrument Description section.

CHANGE TARGET LOCK

This key will toggle the lock your missile has on a particular target. If there are, say, three enemy targets on the screen, pressing this key will alternate the lock-on between each of the three targets.

PAUSE

Pauses the simulation at any time during flight.

WEAPON SELECTION

Pressing this key will cycle through all of the weapons systems you have available on-board. In this cycle there will be the facility to revert to the normal HUD display – 'non- armed' mode. The weapon you select will be automatically armed and ready for launch.

AUTOPILOT

This key will toggle between manual flight and autopilot – see Instrument Description section.

STEALTH

This key toggles Stealth mode on or off. See Instrument Description section.

FLAPS

This toggles flaps in or out. See Instrument Description section.

GEAR

This toggles between lowering and retracting the landing gear. See Instrument Description section.

HUD

This toggles the HUD display on or off. See Instrument Description section.

JOYSTICK/KEYBOARD/MOUSE

These keys will defer to the chosen control at any stage during flight.

BREAK LOCK

This key cancels the lock your weapon may be holding on a target.

COCKPIT

This key 'freezes' all cockpit displays when pressed, although functions will continue as normal. All ESSENTIAL displays will remain visually active. Press this key again to unfreeze.

BRAKES

This toggles the brakes on or off. See Instrument Description section.

FIRE/TRIGGER

This key emulates the Joystick Fire/Mouse LH buttons and fires the appropriate weapon, if armed. Note: with certain weapons, it is necessary to wait for them to fix a lock on to a target – an appropriate symbol will appear in the HUD: See HUD diagram.

LEVEL WINGS

This will automatically recover you from any bad stalls, rolls, etc. and will level your craft out.

CHAFF

This releases the Chaff. This effectively 'blinds' enemy radar and radar-guided missiles.

FLARE

This releases a flare (decoy), used primarily to divert infra-red-guided missiles.

DIRECT FLIGHT CONTROLS

Cursor-up key / Joystick up / Mouse up	– Lower the nose
Cursor-down key / Joystick down / Mouse down	– Elevate the nose
Cursor-left key / Joystick left / Mouse left	– Bank Left
Cursor-right key / Joystick right / Mouse right	– Bank Right
Space-bar / Joystick fire / Mouse Left Button	– Launch/Fire

INSIDE
COCKPIT

OUTSIDE
PLANE

PRESS TWICE	ESC	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10
	EJECT	FRONT	REAR	LEFT	RIGHT	SATELITE	SOUTH FACING	ZOOM IN	ZOOM OUT	BEHIND	NORTH FACING

MFDS										RPM						
~	1	2	3	4	5	6	7	8	9	0	=	+ =	\			
← →	Q	W	E FCM CANCY	R	T CHAIN 2 TARGET LOCK	Y	U	I	O	P	[]	WEAPON SELECTION			
CTRL	CAPS LOCK	AUTO PILOT TOGGLE	STEALTH TOGGLE	S	D	F FLAPS TOGGLE	G GEAR TOGGLE	H HUD TOGGLE	J JOY STICK	K 2V BOARD	L	;	#	←		
↑	Z	X BREAK LOCK	C COCKPIT ON/OFF	V	B BRAKES TOGGLE	N	M	.	>	?	↩					
ALT	A	PILOT TOGGLE										FIRE / TRIGGER			A	ALT

DEL BREAK LOCK	HELP LEVEL WINGS
----------------------	------------------------

	↑ NOSE UP	
← LEFT	↓ DOWN	→ RIGHT

()	!	.
7	8	9	-
4	5	6	*
1 WFO	2 WFS	3 WBO	ENTER
0 OWF		FLARE	

← SUPERCRUISE MODE
(100% THRUST)

RPM

THE NEXT GENERATION COCKPIT SYSTEM (ECOP)

INSTRUMENT DESCRIPTION

1-4: Flight Surfaces and controls panels which are also colour coded and act as damage control panels.

1. The Auto-Pilot

This key turns auto-pilot on or off. When operative the light is on green. The auto-pilot flies you on your last setting, but does not avoid high ground and mountains.

2. Brakes

When your plane is on the ground the brake key turns the landing gear brakes on and off – in the air it turns the air brakes on or off. When the air brake is extended or the gear brake is on, the brake light will appear green. If the brake light is red then the brakes are not operative, or are damaged. If you exceed 70 rpm on the ground whilst brakes are engaged, you will incur damage to the landing gear.

3. Flaps

The flap key turns the wing flaps out and in. When the flaps are out, the aircraft slows down, gains lift and reduces stall speed. When out, the green Flaps light will appear. High speeds can rip off the flaps if they are extended out, causing serious wing damage above 360 mph. A yellow light will warn you if you exceed 260 mph. Fatal damages are indicated in red text.

4. Landing Gear

The green landing gear light will appear when the gear is out and in the landing position. When gear is retracted the light is out. If you exceed 320 mph you will fatally damage your gear if it is out and at 240 mph a yellow caution light will appear. If this occurs, you should either raise your gear or slow down to prevent any further damage. A red light indicates fatal damage or failure to your gear.

5-9: Systems Analysis

5. Master Arm Light

This lights up when a selected weapon is armed and ready for launch (see weapons).

6. Stall Light

A stall occurs when the wings angle of attack becomes too acute. Unstable air flows over the wings surfaces and reduces lift which generally causes the nose to drop. Stall speed varies in different circumstances depending on the aircrafts flaps and attitude.

NOTE

The F22 and F29 computer system recovers from stalls automatically – all you need do is level out and bring your pitch back to normal.

7. RPM Bar

This shows the amount of thrust being applied. Each small bar represents 10% increments of thrust. To increase and decrease thrust press the thrust key (see keyboard). More thrust consumes fuel quicker.

8. The Fuel Bar

This shows the amount of fuel left in the three internal fuel tanks of each plane. This is represented in increments of 1000 lbs for each small bar shown (if external fuel pods are carried the fuel in these is spent first and then the empty tanks ejected).

9-15: Warning Indicators (Yellow 196 Caution, Red 196 Danger).

9. Fire

If there is an engine fire this light will flash red – it is not recoverable and the pilot must eject.

10. Fuel (low)

If the level of fuel is below 2000 pounds a yellow caution light will appear. If below 500 pounds a red flashing light will appear and below 200 pounds a solid red light and a message will appear on the HUD.

11. Engine

The engine warning light will appear a cautionary yellow if the RPM falls below 50% in flight or if partial engine damage has occurred. If severe engine damage occurs, the light will flash red and the pilot will have to eject. Partial (yellow) engine damage allows you to limp back to base, but can get worse if left unchecked. A solid red light represents turbine failure.

12. Altitude

If you fly below 500ft a yellow altitude warning light will appear; below 200ft a red light will show.

13. Radar

If the radar is damaged partially or is faulty, a yellow caution light will appear. If it is totally damaged or destroyed a red light will show.

14. WEP (Weapon Damage)

If the weapon system is damaged or jams on one particular weapon, the warning light will appear appropriately.

15. COM (Communications)

If any communication faults occur, a yellow warning light will appear. If these faults are fatal (and irreparable) a red light will appear.

Note: The F29 and F22 have a computer self-diagnostics test and in some cases are able to track down and repair faults.

(only yellow caution faults). E.g. some problems on RAD, WEP and COM can repair automatically.

16. Messages

Various text information is provided on this display, eg: the type of enemy missile approaching, etc.

17-22: ENEMY THREAT PANEL

17. Lock

If a lock is fixed on your plane by enemy radar this light will appear. You can attempt to break the lock with ECM and chaff, and shut down to "stealth".

18. LNCH

When an enemy missile launch occurs then there is a large bright flashing launch light.

19. RWR (Radar Warning Receiver)

This has a fixed range of 24 miles and shows any threats, i.e SAMs and enemy planes (it is a crude horizontal radar).

When an object appears on this and is behind your plane then an audio signal also sounds.

NOTE: RWR still operates in "Stealth" mode, as it receives but does not emit.

20. Threat

When the onboard ECM equipment detects a Fansong signal (Russian SAM Radar Signals), you are presented with a yellow steady missile "threat" light and audio tone. If you are detected and the enemy radar has a target, the missile warning light will flash and the tone warble.

21. Stealth

You have limited radar cloaking and can appear radar invisible if you fly slowly and low and reduce all radar emissions from your craft, i.e radar shutdown. You can still be detected visually but it is a lot safer. An indicator shows how vulnerable you are to radar emission.

Note: The radar and maps have a freeze mode, displaying a target and its position whilst all radars are shut down.

22. ECM (Electronic Counter Measures Radar Jammer)

When activated the ECM light appears. The ECM "blinds" radar guided missiles and stops them homing in on your plane. The ECM works better at long range.

23. Engine Ignition Light

When the engine is powered up this light is activated until RPM reaches 20%.

24-32 The Multi Function Display Units.

24-26: MFD1

24. Systems

This provides present flight details for fuel, RPM, Speed and Altitude.

25. Weapon Selection Screen

This shows the number of weapons and type; which weapon is armed and selected and it also shows the amount of Chaff and flares remaining.

26. BVR Radar

The Beyond Visual Range Radar is used for the medium and long range air to air missiles. It provides extra range than the horizontal radars and shows distant enemy aircraft.

27-29: MFD2

27. Forward Looking Radar

This gives a detailed infra-red display of the front of the plane providing data on the type of a plane, its bearing and speed, whilst in combat.

28. Missile FLIR and TV

This provides a cockpit display of what the CSW, Maverick, MRASM and ASALM sees via TV and forward looking infra-red cameras. This is relayed directly to the cockpit showing the missile closing in on its target in 3-D perspective.

29. Horizontal Indicator

This provides the pilot with information of the plane's roll from left to right and at what angle it is banking.

30-32: MFD3

30. Horizontal Situation Radar

This radar provides a cross section view of the plane and all the area around it, with a variable range indicator. This radar provides locations of SAMs or enemy planes within its 40 mile range.

31. Satellite Radar (Moving map display)

This shows a digital map of the world, 40 miles around you. It provides terrain locations of all enemy bases, factories and road/rail networks.

32. MMD (Moving map display with direction finder)

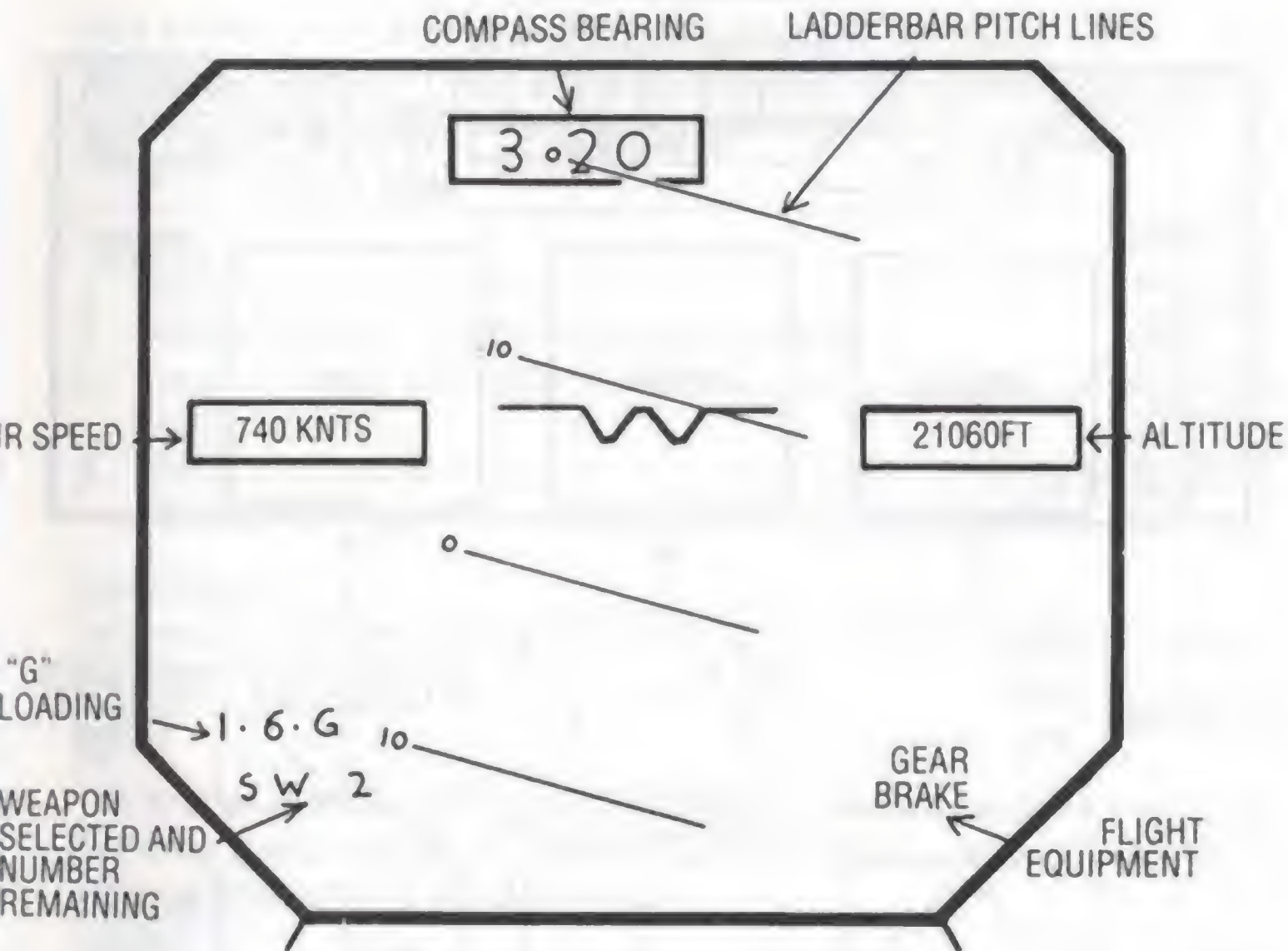
This is a computer generated display above the moving map which shows the direction of the plane with a line indicator.

The Head-Up Display (HUD)

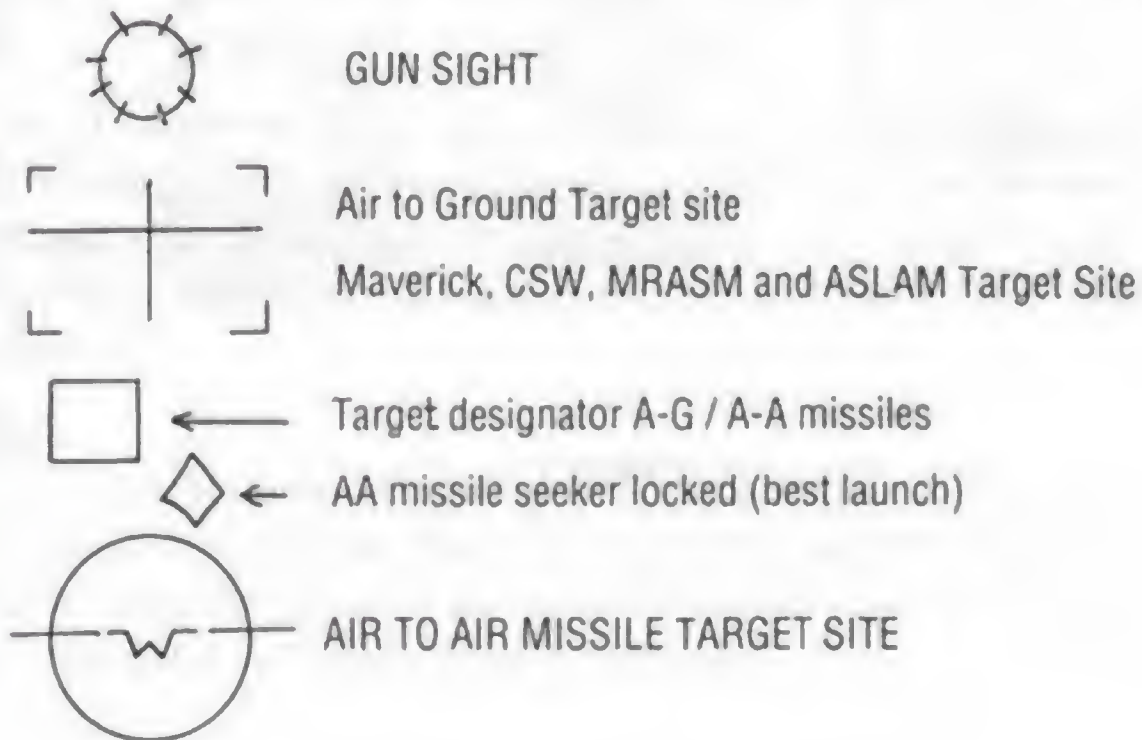
The HUD can be toggled on and off (see keyboard). This will show you on a constant basis: heading, air speed, altitude, "G-loading", weapon selected and number of weapons remaining and the flight equipment currently in use. Other symbols that will appear when appropriate are: gun sight and missile sights.

See diagram below for layout details.

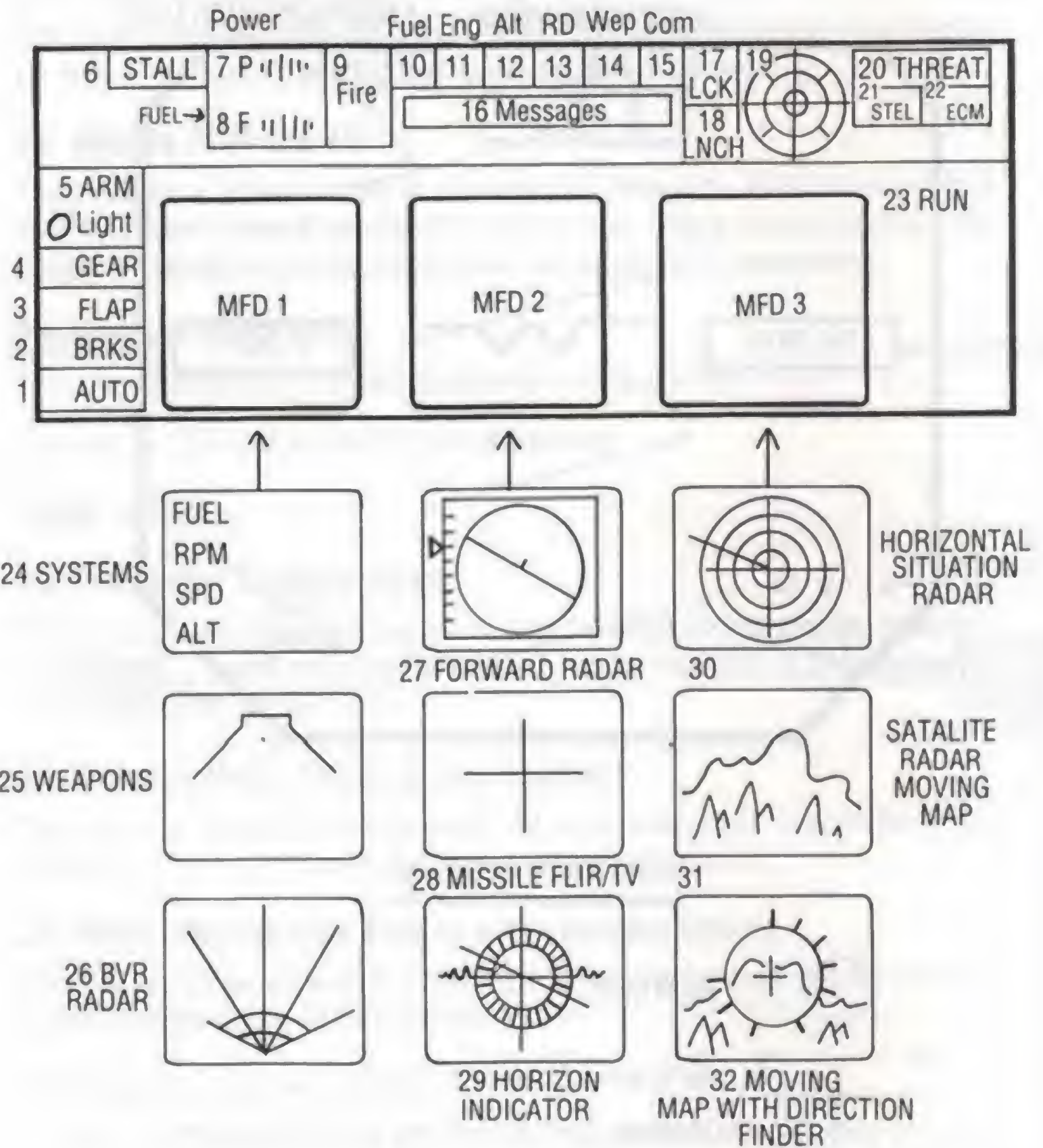
UNIVERSAL HUD SYMBOLOGY



OTHER HUD SYMBOLOGY



COCKPIT DISPLAY



CONSOLE

SIMPLE CONTROL OF YOUR ATF

Here follows a very brief outline of how to land, takeoff and, in simple terms, control your aircraft. For a more in- depth view on the function of other equipment, such as flaps, brakes, etc, please refer to section headed, 'Instrument Description'.

Takeoff

1. Start and build thrust up to 50%.
2. Release brakes and steer slowly along the strip.
3. Increase thrust to 80-90% to eventually attain a takeoff speed of approximately 200 MPH
4. Pull gently back on the 'stick', which lifts the nose. After the plane lifts off the ground, retract landing gear before you exceed 300 MPH.

Level Flight

To achieve 'level' flight, the pilot raises or lowers the nose until the Ladderbar (in the HUD) shows 0 degrees.

Lift

The amount of lift generated on the craft is dependant upon your airspeed. Reducing speed reduces lift, making the craft descend – without lowering the nose. Increasing speed elevates the craft.

'G'-Loading

Represented on the HUD, this informs you of the gravitational force exerted upon yourself and the plane, which varies according to speed and angle. If the G-Loading exceeds about 8, you will be subjected to 'Blackout'. If the G-Loading is -3, or less, then you will be prone to 'Red-out', as the blood rushes to your head.

The most common way of inducing these G ratings is by generating a very steep-banked turn at great speed, the combination of which will result in the aforementioned Blackout. If you straighten out immediately after a very high-angle, high-speed ascent, then you will cause a minus G- force which may result in a Red-out.

Altitude

The maximum altitude of the ATF is 75,000 feet (which is the approximate height of the generated satellite view). To attain the required height to evade radar detection, you need to fly at between 200-300 FT above the ground or the sea level (dependant on the environment you are over).

Ladderbar

Portrayed on the HUD, the Ladderbar indicates the angle of your aircraft in relation to the horizon. Hence, the zero level indicator indicates 'level' flight. Note that the Ladderbar Pitch Lines are always horizontal to the horizon, IE, when you roll, the Ladderbar will change angle accordingly in the HUD. The Ladderbar is shown in increments and decrements of 10 degrees.

Landing

1. Traighten the craft using the centreline of the runway as a reference. Maintain a speed of around 300 MPH and a height of between 1500-2000 FT. Lift the nose slightly to maintain level flight.
2. On approach, descend down to around 300 FT and reduce airspeed to around 200 MPH, lowering your flaps. It is advisable to lower your landing gear at this point. Remember to keep the centreline of the runway directly ahead of you, IE your central focal point of reference.
3. When your wheels touch the runway, reduce the throttle to zero and push forward on the joystick in order to lower the nosewheel down to the ground.
4. Apply the brakes and when the craft stops completely, the mission you have just undertaken is complete.

SCORING

In this simulation, there is no automatic promotion. It is up to your discretion to decide whether you are skilful or experienced enough to promote yourself to the relevant rank.

Your achievements will be based on the rank you have selected. If 1st. Lt. is taken as the 'base' rank, Captain will be awarded twice as many points for the mission; Major, three times; Lt Col., five times and Colonel seven times as much. It must be borne in mind, though, that the higher the rank you select, the more difficult will the mission be to complete.

Scores are given after each mission and Awards (if applicable) after each War Update. Different missions will attain different scores – you will be awarded proportionally more points the further you progress into the war.

MEDALS

1. PURPLE HEART – awarded if injured or killed in action.
2. AIRMANS MEDAL (AM) – awarded after War Update 1.
3. DISTINGUISHED FLYING CROSS (DFC) – awarded after War Update 2

4. SILVER STAR (SS) – awarded after War Update 3.
5. AIRFORCE CROSS (AFC) – awarded after War Update 4.
6. MEDAL OF HONOUR (MOH) – awarded after War Update 5.

F-29 RETALIATOR

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CREDITS

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